### COSMHYC XL/COSMHYC DEMO

# COSNHYC XL COSNHYC DEMO INNOVATIVE H2 COMPRESSION

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- Call year: 2018
- Call topic: FCH-01-7-2018 Improvement of innovative compression concepts for large scale transport applications
- Project dates: 2019 ongoing
- % stage of implementation 28/10/2022: 90 %
- Total project budget: 2 749 613,75 €
- Clean Hydrogen Partnership max. contribution: 2 749 613,75 €
- Partners: EIFER, MAHYTEC, NEL, LBST, STEINBEIS 21









### **COSNHYC DEMO** INNOVATIVE H2 COMPRESSION

- Call year: 2019
- Call topic: Topic FCH-01-8-2020: Scale-up and demonstration of innovative hydrogen compressor

technology for full-scale hydrogen refuelling station

- Project dates: 2021 ongoing
- % stage of implementation 28/10/2022: 45 %
- Total project budget: 3,770,000 €
- Clean Hydrogen Partnership max. contribution: 3,000,000 €
- Partners: EIFER, NEL, MAHYTEC, SEZ, CCTVI, EIFHYTEC







INNOVATIVE H2 COMPRESSION

- First concept of hybrid metal-hydride/mechanical compression solution
- Successful demonstration of full-scale prototype



## **Project Summary**

2019 - ongoing

- Scale-up of COSMHYC solution for higher compression capacity and flow rate
- Solution optimised for heavy duty transport and large captive fleets



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#### 2021 - ongoing

**COSNHYC** DEMO

First demonstration of the COSMHYC hybrid compression concept in a real-life public HRS





## Project Summary: COSMHYC XL

Objectives: developing an innovative compression solution for extra large hydrogen refuelling stations, based on the combination of a metal hydride compressor and a diaphragm compressor. In particular:

- No critical raw materials (in particular no rare earth nor platinum)
- Overall compression ratio of 500 with metal hydrides, 950 bar with mechanical compressor
- Further reduce energy consumption by 30%
- Demonstrate feasibility of 2t/day

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- Demonstrate 6 months of real operation, potential for <1% degradation/1000h
- Demonstrate modularity for different use cases









### **COSNHYC DEMO** INNOVATIVE H2 COMPRESSION

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### COSMHYC DEMO

Main Objective: Demonstration of a full scale innovative compressor in a real-life public HRS, showcasing how it will reduce the HRS cost and footprint while increasing its reliability for a cost-effective compression towards the 2024 targets.

#### **Project Conditions include:**

- 1 year of testing
- Secured fleet of vehicles
- 700 bar HRS
- 200 kg/day
- TRL increase from 5 to 7
- Hydrogen purity assessment













**Achievement:** 



European industry for Hydrogen technologies

### www.eifhytec.com

- Incorporated in 2019
- Headquarters in Strasbourg (FR)
- Production site in Haguenau (FR)
- 4 EU Co-founders with R&D background
- Team: 10 Phd, engineers & technicians
- Manufacturer of H2 technologies
- Developing innovative compressors
- Several funding partners & awards







**Resources:** Current world events are affecting all industries causing dramatic price increases, supply chain disruptions and strain on human resources.

**Regulations:** Installation and operation in a public setting comes with significant regulatory aspects which are being tackled for the first time in this context.

**Next steps:** Wrapping up COSMHYC XL tests. Ongoing COSMHYC DEMO construction work to be completed and installation and commissioning of the public HRS in near future. Start of demonstration phase under real conditions in mid-2023.





### Thank you for your attention!

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